GEOLOGICAL SURVEY OF OHIO
COLUMBUS 10

JOHN H. MELVIN, State Geologist

REPORT OF INVESTIGATIONS No. 4

Additional Analyses of Coals of Ohio

Compiled by
ETHEL S. DEAN

1948

ADDITIONAL ANALYSES OF COALS OF OHIO

Compiled by

ETHEL S. DEAN

CONTENTS

	Page
Introduction	1
Analyses of coal samples from Middle Kittanning bed in Athens and Perry counties	3
Analyses of coal samples from Upper Freeport bed in Athens and Perry counties	6
Analysis of coal sample from Anderson bed in Noble County	11
Analysis of coal sample from Lower Salem bed in Washington County	12
Analyses of coal samples from Meigs Creek bed in Morgan, Noble, and Washington counties	13
Analysis of coal sample from Waynesburg "A" bed in Morgan County	17
Fig I. Map showing locations of samples analyzed	2

INTRODUCTION

In 1929 the Geological Survey of Ohio published its Fourth Series Bulletin 34 titled "Analyses of the Coals of Ohio." Bulletin 34 has been widely used by industry and has been a contributing factor in the accelerated industrial development of our State during the past 18 years.

Some 15 additional Ohio coal samples were collected in 1929-1930 by A. W. Seabright, assisted by I. Vaughn, G. A. Allen, Bob Marshall, W. Graham, C. F. Davis, and R. A. Gollop. These samples were subsequently analyzed by D. J. Demorest and the results placed in the open file of the Survey.

The Geological Survey of Ohio is fortunate in still having as a member of the technical staff Miss Ethel S. Dean, one of the authors of Bulletin 34. Miss Dean has compiled the data presented herewith as Report of Investigations No. 4.

JOHN H. MELVIN
State Geologist

November 26, 1948

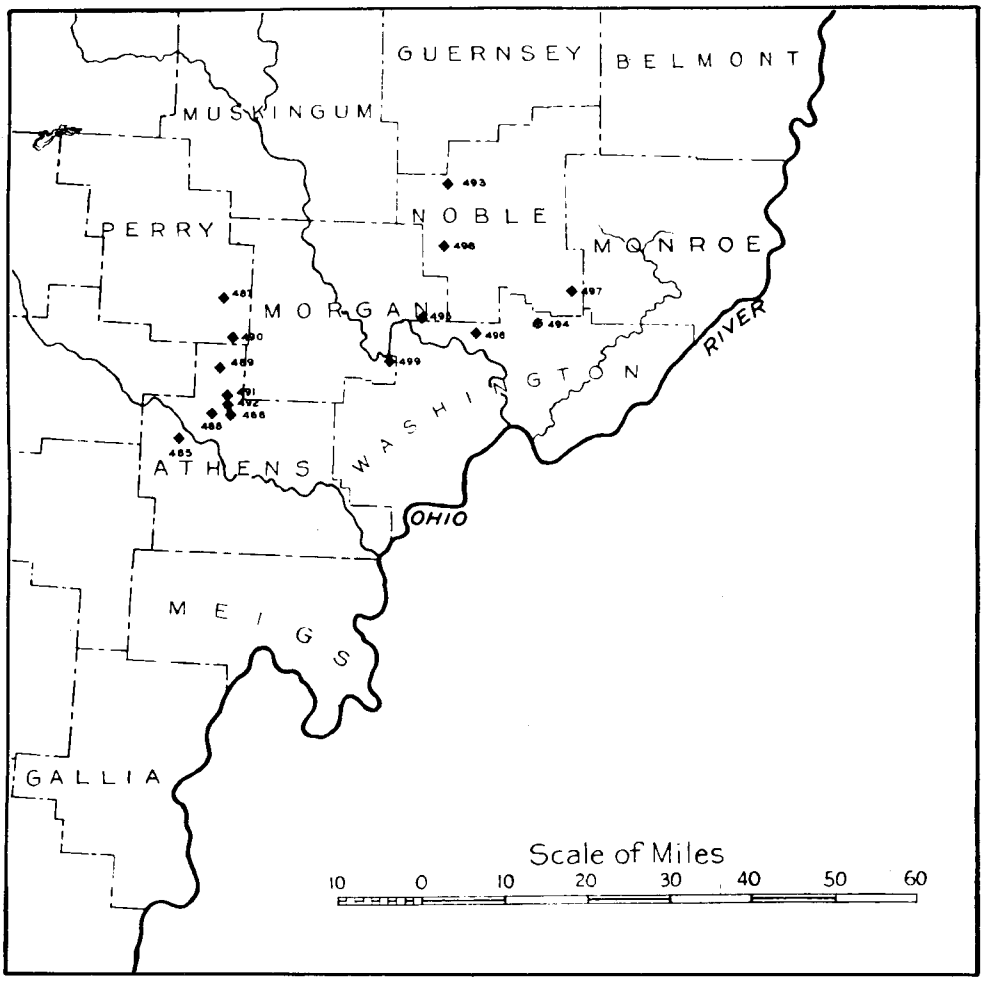

Figure 1. Map showing locations of samples analyzed.

SAMPLES FROM MIDDLE KITTANNING (No. 6) COAL BED

SAMPLE No. 485

Sample of Middle Kittanning coal taken January 3, 1930, by A. W. Seabright and I. Vaughn, from the Kimberly No. 1 mine, Valley Mining, Inc., southeast quarter Section 15, York Township, Athens County. Sample cut on face 5th south, 1¼ miles from mouth. Dry drift mine. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Shale, blue, roof.			
Coal, bony, rejected	*Middle Kittanning*, thickness sampled 4 ft. 5 in.	0	3
Coal, cannel-like, sampled		0	7
Coal, sampled		0	7½
Coal, gray, soft, rejected		0	5½
Shale, rejected		0	4
Coal, sampled		0	6
Pyrite, rejected		0	½
Coal, sampled		0	8¾
Coal, mother, sampled		0	¼
Coal, sampled		0	7½
Shale, rejected		0	2
Coal, sampled		1	4
Clay, soft, impure.			
		5	8

Proximate analysis	As received	Moisture free
Moisture	7.40	0.00
Volatile matter	39.28	42.42
Fixed carbon	47.92	51.75
Ash	5.40	5.83
	100.00	100.00

Ultimate analysis	As received	Moisture free
Carbon	69.85	75.44
Hydrogen	4.47	3.95
Oxygen	18.33	12.69
Nitrogen	.98	1.05
Sulphur	.97	1.04
Ash	5.40	5.83
	100.00	100.00

		As received	Moisture free
Heating value	Calories	7,028	7,590
	B. t. u.	12,652	13,663
Fusion of ash	Incipient	2,605° F.	
	Complete	2,709° F.	

SAMPLE No. 486

Sample of Middle Kittanning coal taken January 15, 1930, by A. W. Seabright, G. A. Allen, and Bob Marshall, from the Poston No. 6 mine, Sunday Creek Coal Co., northwest quarter Section 11, Dover Township, Athens County. Cut on break through 19-20 east off 4th north, 550 feet in. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Coal, bony, left for roof		0	10
Coal, dull, cannel-like, sampled		0	3
Coal, sampled		0	½
Pyrite, irregular, sampled		0	1/32
Coal, sampled		0	1
Pyrite, irregular, sampled	*Middle Kittanning,*	0	1/16
Coal, sampled	thickness sampled	0	8¾
Coal, soft, with mother coal, rejected	4 ft. 6 27/32 in.	0	7
Shale, dark, rejected		0	3¼
Coal, sampled		0	11¾
Coal, horny, rejected		0	1¼
Coal, sampled		2	5¾
Clay, hard, impure.			
		6	4 11/32

Proximate analysis	As received	Moisture free
Moisture	6.02	0.00
Volatile matter	39.28	41.80
Fixed carbon	49.74	52.93
Ash	4.96	5.27
	100.00	100.00

Ultimate analysis	As received	Moisture free
Carbon	71.32	75.88
Hydrogen	4.41	3.98
Oxygen	17.52	12.97
Nitrogen	0.98	1.04
Sulphur	0.81	0.86
Ash	4.96	5.27
	100.00	100.00

		As received	Moisture free
Heating value	Calories	7,066	7,518
	B. t. u.	12,720	13,532
Fusion of ash	Incipient	2,630° F.	
	Complete	2,750° F.	

SAMPLE No. 487

Sample of Middle Kittanning coal taken February 14, 1930, by A. W. Seabright, I. Vaughn, and J. Marshall, from the Rendville No. 9 mine, Sunday Creek Coal Company, northwest quarter Section 10, Monroe Township, Perry County. Cut on break through 14-13 west off main north, 200 ft. in. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Shale, blue, roof.			
Coal, gray, soft, rejected		0	7½
Coal, bony, rejected		0	10
Shale, rejected		0	2
Coal, sampled		0	5¼
Shale, irregular, rejected		0	¾
Pyrite, rejected		0	¼
Coal, sampled	*Middle Kittanning*,	0	9 11/16
Coal, mother, sampled	thickness sampled	0	1/16
Coal, sampled	3 ft. 1½ in.	0	6 15/16
Pyrite, sampled		0	1/16
Coal, sampled		0	1 15/32
Sulphur, sampled		0	1/32
Coal, sampled		0	4⅞
Coal, mother, sampled		0	⅛
Coal, sampled		0	9
Clay, impure.			
		6	9½

Proximate analysis

	As received	Moisture free
Moisture	6.60	0.00
Volatile matter	40.62	43.49
Fixed carbon	45.20	48.39
Ash	7.58	8.12
	100.00	100.00
Sulphur	2.60	2.78

Heating value	Calories	6,870	7,356
	B. t. u.	12,367	13,241
Fusion of ash	Incipient	2,422° F.	
	Complete	2,470° F.	

SAMPLES FROM UPPER FREEPORT (No. 7) COAL BED

SAMPLE No. 488

Sample of Upper Freeport coal taken August 23, 1929, by A. W. Seabright and I. Vaughn from the Bailey Run mine No. 69, White Ash Coal Co., slope, in southeast quarter Section 29, Dover Township, Athens County. Sample cut Room No. 9, 11th west off 1st north entry. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Sandstone		2	6
Shale, black, irregular (6 to 8 feet)		7	0
Coal, rejected		0	3¾
Coal, bone, rejected		0	5
Coal, sampled		0	1¼
Pyrite, platy, sampled		0	1/16
Coal, sampled	*Upper Freeport,*	0	2¾
Coal, mother, sampled	thickness sampled	0	1/16
Coal, sampled	3 ft. 2 3/16 in.	0	2½
Coal, mother, sampled		0	1/16
Coal, sampled		0	3
Shale, rejected		0	2
Coal, sampled		2	4½
Pyrite, rejected		0	½
Clay, siliceous, hard.			
		13	7 1/16

Proximate analysis	As received	Moisture free
Moisture	8.11	0.00
Volatile matter	37.44	40.74
Fixed carbon	50.11	54.53
Ash	4.34	4.73
	100.00	100.00

Ultimate analysis	As received	Moisture free
Carbon	62.32	67.82
Hydrogen	5.62	5.14
Oxygen	25.28	19.65
Nitrogen	1.23	1.34
Sulphur	1.21	1.32
Ash	4.34	4.73
	100.00	100.00

		As received	Moisture free
Heating value	Calories	6,885	7,492
	B. t. u.	12,393	13,487
Fusion of ash	Incipient	2,454° F.	
	Complete	2,500° F.	

SAMPLE No. 489

Sample of Upper Freeport coal taken August 24, 1929, by A. W. Seabright and I. Vaughn from the McClelland mine, slope, wagon, cut from face, 4th north off 2nd west, in southeast quarter Section 21, Trimble Township, Athens County. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Shale, black, good roof.			
Coal, hard, sampled	*Upper Freeport,* thickness sampled 3 ft. 3⅜ in.	0	5½
Coal, soft, sampled		0	2
Shale, with pyrite, rejected		0	1
Coal, bony, rejected°		0	9
Shale, rejected		0	3
Coal, with small pyrite lenses, sampled		1	4¾
Coal, mother, sampled		0	⅛
Coal, sampled		1	3
Coal, highly pyritiferous, rejected		0	3
Clay, siliceous, generally hard.			
		4	7⅜

° This coal is kept separate and sold for reduced price.

Proximate analysis	As received	Moisture free
Moisture	6.78	0.00
Volatile matter	40.87	43.84
Fixed carbon	45.87	49.21
Ash	6.48	6.95
	100.00	100.00

Ultimate analysis	As received	Moisture free
Carbon	60.07	64.44
Hydrogen	5.34	4.93
Oxygen	24.74	20.06
Nitrogen	0.91	0.98
Sulphur	2.46	2.64
Ash	6.48	6.95
	100.00	100.00

		As received	Moisture free
Heating value	Calories	6,841	7,339
	B. t. u.	12,315	13,211
Fusion of ash	Incipient	2,436° F.	
	Complete	2,468° F.	

SAMPLE No. 490

Sample of Upper Freeport coal taken December 12, 1929, by A. W. Seabright and I. Vaughn, from the Hatfield wagon mine, slope, Section 35, central part, Monroe Township, Perry County. Cut 100 feet in hill under light covering, coal shows no sulphur stain. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Sandstone, massive.			
Shale, blue.		2	0
Coal, bone, rejected	*Upper Freeport*, thickness sampled 3 ft. 7½ in.	0	11
Coal, sampled		0	8
Coal, streaked with mother coal, sampled		0	1
Coal, sampled		0	1½
Shale, rejected		0	1½
Coal, sampled		0	2¼
Coal, mother, sampled		0	¾
Coal, middle part contains small pyrite nodules, sampled		2	6
Clay, soft, impure.			
		6	8

Proximate analysis

	As received	Moisture free
Moisture	5.42	0.00
Volatile matter	41.74	44.13
Fixed carbon	46.79	49.48
Ash	6.05	6.39
	100.00	100.00
Sulphur	2.70	2.85

		As received	Moisture free
Heating value	Calories	6,970	7,368
	B. t. u.	12,547	13,263
Fusion of ash	Incipient	2,446° F.	
	Complete	2,470° F.	

SAMPLE No. 491

Sample of Upper Freeport coal taken December 20, 1929, by A. W. Seabright and I. Vaughn, from the Doty Coal Company mine, southeast quarter Section 13, Trimble Township, Athens County. Cut from face, 2nd north, 2500 feet from slope. Mine dry. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Shale, black, roof.			
Coal, soft, sampled		0	4
Shale, bone, rejected		0	6
Coal, bony, rejected		0	3
Coal, sampled	*Upper Freeport,*	0	5
Shale, rejected	thickness sampled	0	2½
Coal, sampled	3 ft.	1	7½
Coal, mother, sampled		0	¼
Coal, sampled		0	3¼
Coal, mother, sampled		0	¼
Coal, sampled		0	3¾
Clay, siliceous, floor.			
		3	11½

Proximate analysis	As received	Moisture free
Moisture	6.26	0.00
Volatile matter	41.19	43.94
Fixed carbon	46.56	49.67
Ash	5.99	6.39
	100.00	100.00

Ultimate analysis	As received	Moisture free
Carbon	69.63	74.28
Hydrogen	4.83	4.41
Oxygen	16.18	11.33
Nitrogen	1.10	1.17
Sulphur	2.27	2.42
Ash	5.99	6.39
	100.00	100.00

		As received	Moisture free
Heating value	Calories	7,016	7,486
	B. t. u.	12,629	13,475
Fusion of ash	Incipient	2,339° F.	
	Complete	2,406° F.	

SAMPLE No. 492

Sample of Upper Freeport coal taken January 30, 1930, by A. W. Seabright, I. Vaughn, W. Graham, and C. F. Davis, from the Sedalia mine No. 28, Warner Collieries Company, southeast quarter Section 18, Dover Township, Athens County. Cut B.R.T. 7-8 W. 100 feet west of section line. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Shale, gray.			
Coal, irregular, rejected		0	2
Coal, bone, rejected		0	8
Coal, soft, with paper-like pyrite partings, sampled		0	2¼
Coal, sampled	*Upper Freeport*,	0	6¾
Shale, rejected	thickness sampled	0	2½
Coal, sampled	3 ft. 3½ in.	0	2½
Coal, mother, sampled		0	1
Coal, sampled		1	9⅜
Coal, mother, sampled		0	⅜
Coal, sampled		0	5
Clay, siliceous.			
		4	4

Proximate analysis

	As received	Moisture free
Moisture	6.97	0.00
Volatile matter	39.58	42.54
Fixed carbon	47.35	50.90
Ash	6.10	6.56
	100.00	100.00
Sulphur	2.78	2.99

		As received	Moisture free
Heating value	Calories	6,936	7,458
	B. t. u.	12,485	13,425
Fusion of ash	Incipient	2,390° F.	
	Complete	2,470° F.	

SAMPLE FROM ANDERSON COAL BED

SAMPLE No. 493

Sample of Anderson coal taken November 26, 1929, by A. W. Seabright and R. A. Gollop from the Congleton mine, southwest quarter Section 7, Noble Township, Noble County. Mine level at road, mine small. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Shale, dark, fossiliferous.			
Coal, sampled	*Anderson,* thickness sampled 1 ft. 10⅜ in.	0	4¼
Coal, mother, sampled		0	⅛
Coal, with small granules of pyrite, sampled		1	1⅞
Pyrite, platy, irregular, sampled		0	⅛
Coal, with thin pyrite plates, sampled		0	4
Clay, impure.			
		1	10⅜

Proximate analysis	As received	Moisture free
Moisture	3.29	0.00
Volatile matter	40.84	42.23
Fixed carbon	46.67	48.26
Ash	9.20	9.51
	100.00	100.00

Ultimate analysis	As received	Moisture free
Carbon	69.90	72.29
Hydrogen	3.84	3.59
Oxygen	13.47	10.90
Nitrogen	0.92	0.95
Sulphur	2.67	2.76
Ash	9.20	9.51
	100.00	100.00

		As received	Moisture free
Heating value	Calories	7,060	7,301
	B. t. u.	12,708	13,142
Fusion of ash	Incipient	2,305° F.	
	Complete	2,347° F.	

SAMPLE FROM LOWER SALEM COAL BED

SAMPLE No. 494

Sample of Lower Salem coal taken August 29, 1929, by A. W. Seabright and I. Vaughn from J. O. Nesselroad mine, northeast quarter Section 35, Salem Township, Washington County. Water in top coal. Coal has a very strong face cleavage. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Limestone, irregular.			
Shale, calcareous, very tender roof.			
Coal, bony, rejected		0	4
Coal, faces covered with calcite plates, sampled	*Lower Salem,*	0	4
Coal, streaked with pyrite, sampled	thickness sampled	0	1
Coal, upper part with some calcite plates, sampled	2 ft. 4 in.	0	7⅜
Coal, bony, sampled		0	⅛
Coal, sampled		1	3½
Clay, calcareous, soft.			
		2	8

Proximate analysis	As received	Moisture free
Moisture	2.19	0.00
Volatile matter	41.06	41.98
Fixed carbon	46.00	47.03
Ash	10.75	10.99
	100.00	100.00

Ultimate analysis	As received	Moisture free
Carbon	68.37	69.91
Hydrogen	4.91	4.77
Oxygen	10.08	8.32
Nitrogen	0.70	0.71
Sulphur	5.19	5.30
Ash	10.75	10.99
	100.00	100.00

		As received	Moisture free
Heating value	Calories	6,972	7,128
	B. t. u.	12,550	12,831
Fusion of ash	Incipient	2,420° F.	
	Complete	2,508° F.	

SAMPLES FROM MEIGS CREEK (No. 9) COAL BED

SAMPLE No. 495

Sample of Meigs Creek coal taken August 28, 1929, by A. W. Seabright and I. Vaughn from the C. M. Noyes mine, in southwest quarter Section 27, one mile east of Ludlow, Center Township, Morgan County. Cut 150 feet under hill; coal is sulphur stained and wet. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Shale, soft, poor roof.			
Coal, bony, sulphur stained, sampled	*Meigs Creek*, thickness sampled 2 ft. 9 in.	0	9
Shale, rejected		0	1½
Coal, bony, sulphur stained, sampled		0	11⅛
Coal, mother, sampled		0	⅛
Coal, sampled		0	4⅝
Coal, mother, sampled		0	⅛
Coal, bony, sampled		0	8
Clay, impure.			
		2	10½

Proximate analysis

	As received	Moisture free
Moisture	2.53	0.00
Volatile matter	41.22	42.29
Fixed carbon	42.40	43.50
Ash	13.85	14.21
	100.00	100.00
Sulphur	5.66	5.81

		As received	Moisture free
Heating value	Calories	6,680	6,853
	B. t. u.	12,024	12,336
Fusion of ash	Incipient	2,444° F.	
	Complete	2,516° F.	

SAMPLE No. 496

Sample of Meigs Creek coal taken August 30, 1929, by A. W. Seabright from the George Pfile mine, left fork of Cat Creek, 2 mile, N. 30° west of Lowell, Adams Township, Washington County. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Sandstone, massive.			
Shale, good roof.		6	0
Coal, sampled		0	9 3/16
Coal, bone, rejected		0	5/8
Pyrite, rejected	*Meigs Creek*,	0	1/16
Coal, mother coal and bone coal, rejected	thickness sampled	0	3 1/4
Coal, bony, sampled	2 ft. 5 11/16 in.	1	5 5/16
Pyrite, sampled		0	3/16
Coal, bony, sampled		0	3
Clay, impure.			
		2	8 5/8

Proximate analysis	As received	Moisture free
Moisture	2.72	0.00
Volatile matter	41.16	42.30
Fixed carbon	44.57	45.82
Ash	11.55	11.87
	100.00	99.99

Ultimate analysis	As received	Moisture free
Carbon	67.07	68.95
Hydrogen	6.83	6.71
Oxygen	9.03	6.79
Nitrogen	1.04	1.07
Sulphur	4.48	4.61
Ash	11.55	11.87
	100.00	100.00

		As received	Moisture free
Heating value	Calories	6,850	7,041
	B. t. u.	12,330	12,675
Fusion of ash	Incipient	2,422° F.	
	Complete	2,485° F.	

SAMPLE No. 497

Sample of Meigs Creek coal taken in 1930, by A. W. Seabright and R. A. Gollop from the Barnes and Mellon mine, northwest quarter Section 13, Elk Township, Noble County. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Coal, roof, not sampled		2	0
Shale, rejected		0	6
Coal, bone, hard, rejected		0	1
Coal, containing some pyrite nodules, sampled		1	11
Coal, laminated, sampled	*Meigs Creek*,	0	3¾
Coal, mother, sampled	thickness sampled	0	¼
Coal, sampled	4 ft. 3½ in.	1	6½
Pyrite, not regular, sampled		0	¼
Coal, containing pyrite nodules, sampled		0	5¾
Clay, impure.			
		4	10½

Proximate analysis	As received	Moisture free
Moisture	1.51	0.00
Volatile matter	45.09	45.78
Fixed carbon	42.05	42.68
Ash	11.35	11.54
	100.00	100.00

Ultimate analysis	As received	Moisture free
Carbon	68.66	69.70
Hydrogen	4.12	4.01
Oxygen	9.30	8.08
Nitrogen	1.12	1.14
Sulphur	5.45	5.53
Ash	11.35	11.54
	100.00	100.00

		As received	Moisture free
Heating value	Calories	7,062	7,170
	B. t. u.	12,713	12,907
Fusion of ash	Incipient	2,373° F.	
	Complete	2,446° F.	

SAMPLE No. 498

Sample of Meigs Creek coal taken November, 1929, by A. W. Seabright and R. A. Gollop from the O. E. Morgan mine, southeast quarter Section 24, Sharon Township, Noble County. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Shale, roof		10	0
Coal, bony, rejected	*Meigs Creek*, thickness sampled 4 ft. 2½ in.	0	1½
Coal, hard, sampled		1	4⅞
Coal, mother, sampled		0	⅛
Coal, sampled		0	¾
Coal, mother, sampled		0	¼
Coal, laminated, sampled		0	5½
Coal, bony, and shale, carbonaceous, rejected		0	1½
Coal, sampled		1	1⅞
Pyrite, sampled		0	⅛
Coal, sampled		0	2¾
Coal, mother, and pyrite, rejected		0	½
Coal, sampled		0	6¼
Coal, mother, sampled		0	½
Coal, soft, bright, sampled		0	3½
Clay, hard, impure.			
		14	6½

Proximate analysis

	As received	Moisture free
Moisture	2.00	0.00
Volatile matter	42.75	43.62
Fixed carbon	43.20	44.08
Ash	12.05	12.30
	100.00	100.00
Sulphur	5.03	5.13

		As received	Moisture free
Heating value	Calories	6,935	7,075
	B. t. u.	12,483	12,735
Fusion of ash	Incipient	2,256° F.	
	Complete	2,322° F.	

SAMPLE FROM WAYNESBURG "A" COAL BED

SAMPLE No. 499

Sample of Waynesburg "A" coal taken August 27, 1929, by A. W. Seabright and I. Vaughn from the Clarence Walker mine, one mile east of Brokaw, Windsor Township, Morgan County. Drift mine, household use, cut about 200 feet under hill, coal shows no stain of surface weathering. Analysis by D. J. Demorest.

Geologic section		Ft.	In.
Shale, with thin sandstone layers		15	0
Shale, carbonaceous, rejected		0	2¼
Coal, sampled	*Waynesburg "A"*, thickness sampled 2 ft. ¾ in.	0	6
Shale, rejected		0	1
Coal, bony, rejected		0	5¼
Coal, sampled		1	½
Coal, bone, rejected		0	¼
Coal, sampled		0	6¼
Clay, impure.			
		17	9½

Proximate analysis	As received	Moisture free
Moisture	4.08	0.00
Volatile matter	38.54	40.18
Fixed carbon	50.26	52.40
Ash	7.12	7.42
	100.00	100.00

Ultimate analysis	As received	Moisture free
Carbon	58.40	60.88
Hydrogen	6.30	6.10
Oxygen	22.65	19.83
Nitrogen	1.08	1.13
Sulphur	4.45	4.64
Ash	7.12	7.42
	100.00	100.00

		As received	Moisture free
Heating value	Calories	6,196	6,460
	B. t. u.	11,154	11,628
Fusion of ash	Incipient	2,438° F.	
	Complete	2,515° F.	